POISONING ADMISSIONS IN JAKARTA HOSPITALS DURING 1971 and 1972*

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Penyelidikan ini meliputi survey 437 kasus keracunan yang dirawat dalam 11 Rumah Sakit di Jakarta selama tahun 1971 dan 1972. Semua data dari status penderita dipindahkan kedalam coding-sheets dan karakteristik dibicarakan.
Diantara 10.000 penderita yang dirawat dirumah sakit, 34 disebabkan karena keracunan sedangkan angka kematian (case-fatality rate) ialah 4,2 persen. Ratio antara laki-laki dan wanita ialah 1,46: 1. Anak sampai dengan 5 tahun dan golongan umur 20–29 tahun paling sering mengalami keracunan, tetapi kematian dijumpai paling banyak pada golongan umur 70 tahun keatas. Selain keracunan jengkol, minyak tanah merupakan penyebab utama (terbanyak pada anak), disusul oleh barbitural dan salisilat, sedangkan pestisida menduduki tempat kelima.

There is much debate about how and where a poisoned patient should be treated. Most hospitals are treating them in the common existing wards of Internal Medicine, Pediatrics and Intensive Care Units. There are only a few specially arranged "Poisoning Units" in the world, where poisoned patients are treated separately by a trained staff. Both methods have its advantages and disadvantages.

It should be realized that only 5–10 per cent of cases will need any specialized treatment like specific antidotes, mechanical respirators or dialysis. The greater majority will be cured by just symptomatic treatment, while giving the body the opportunity to biotransform and excrete the toxic chemical involved.

As most drug-reactions in the body are reversible, the outcome of treatment whether antidotal or symptomatic, will be without sequellae in the case of recovery. There is no doubt however that apart from cost and personnel, a Poisoning Unit is desirable in large cities.

Poisoning statistics are difficult to obtain and rather unreliable. Only in some countries are poisonings notifiable. In order to be meaningful, background data like hospital-admission-rates and population surveyed should be included.

Table 1 reflects some global incidences of poisoning with special emphasis on pesticides. Most figures were derived from Poisoning Control Centres in the respective countries.

It is estimated that in 1957; 50,000 adults qualified for hospital treatment in the U.K. and in some Medical Institutions, poisoning cases constitute up to 20 per cent of all emergency admissions.

In Edinburgh, Scotland with a population of 750,000 there were 1,300 cases admitted into hospital in 1970. In Canada, 31, 519 persons were hospitalized because of poisoning, out of 47,222 cases which occurred during 1969. In that same year Australia's National Poisons Service received a total of 8, 491 reports, of which 66 had a fatal outcome. The death-toll in the U.K. from poisoning in 1967 was 6,700, almost equalling traffic-death of 7,000 in the same year. Poisoning was given as the cause of death in 5,883 cases in the U.S. in 1953.

This paper is the first attempt to estimate the problem in Jakarta and to describ the poisoning characteristics in hospitalized patients.

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Table 1. Poisoning statistics with emphasis on pesticides.

Country	Year		Poisoning	
			Total	Pesticides percentage
Australia	1969	National Poisons Service	8.491	6.4
Belgium	1964–70	Calls	36.769	5.7
Canada	1969	Poison Control Centre	47.222	2.1
Chechoslovakia	1968	Occup.dis. (Notifiable)	432	8.8
	1970		476	3.3
Fed. Rep. of Germany	–	Calls	±60.000/yr.	1.5
France (Paris)	1968	Hospital Fernand Widal, Paris.	8.874	4.3
Ireland	1966–71	Calls	5.845	4.9
Poland	–	Poisoning Notifications (compulsory)	±30.000/yr.	8
Romania	1965–67	Survey	–	Less than 8
U.K.	1969	Farm accidents (Notifiable)	7.387	0.2
U.S.	1970	National Clearinghouse for Pois. Control Centres	114.228	4.2

MATERIALS AND METHODS

This survey included 11 hospitals in Jakarta city with a population of 4.5 million, which admitted acute poisoning cases in their respective existing wards during the year 1971 and 1972. The total numbers obtained were not entirely representative for Jakarta city since medical records only started within this period for some hospitals and some even do not have one.

In the discussions "poisoning" will be referred as an acute state of disease due to overdosage with a drug or chemical, whether taken intentionally or unintentionally; excluding drug-reactions which reflects more the variability of a population rather in responding to a therapeutic dose of drug or chemical. Penicillin anaphylactic reactions are therefore not included in the study. Food poisonings are included so far as the causative factor is of a known chemical nature, whether inherent to the food or accidentally added to it. Cassave and jengkol poisoning, but not allergic reactions to seafood or crab were also included. Fourhundred thirty seven cases of poisoning with the above-mentioned criteria were collected during the year 1971 and 1972.

All data from the patients' original records were transferred to special coding sheets, which were suitable for electronic computation. Due to the limited number of cases surveyed however, this report has been made without any computerisation.

RESULTS

Fourhundred thirty seven cases of poisoning were collected from 11 hospitals and shown in table 2 below.

Excluding hospitals without records, the rate of poisoning was 34 per 10.000 admissions. The case-fatality-rate from poisoning was 5.4 per cent for 1971 and 3.2 per cent for 1972. There seems to be no preference as to the month and day of the week of admittance, but the greatest incidence of admissions took place between 10.00 A.M and 10.00 P.M. (70 per cent).

Males and females were affected in a ratio of 1.46 : 1 .

The age distribution with their respective mortality is represented in Fig. I.

The peak incidence was found in the age-group of 20–29 years, followed by the age-group of 0–5 years. Case-fatality-rate was highest (3 out of 4) in the oldest age-group but remarkably low in the age-group of 5 years and younger.

Table 2. Poisoning and Case-fataliry-rate in 11 hospitals in Jakarta (1971, 1972).

Hospital	Admission		Poisoning		Death		Case fatality rate (per cent)	
	1971	1972	1971	1972	1971	1972	1971	1972
R.S.A.L.	Nd.	5,459++	Nd.	6(0.1 per-cent)	—	0	—	0
R.S. Cikini	3,402	3,726	0	2(less than 0.1 per cent)	—	0	—	—
R.S. Fatmawati	7,974	8,430	15(0.2 per cent)	16(0.2 per-cent)	1	1	6.7	6.3
R.S. Husada	Nd	3,780	Nd	52(1.4 per-cent).	—	0	—	0
R.S. Jakarta	Nd	Nd	Nd	4(?)*	—	—	—	0
R.S.P.A.D.	Nd	Nd	Nd	Nd	—	—	—	—
R.S. Pelni	Nd	Nd	Nd	Nd	—	—	—	—
R.S. Persahabatan	Nd	Nd	Nd	13(?)*	—	0	—	0
R.S. St. Carolus	13,869	14,007	4(less-than 0.1 per cent)	6(less than 0.1 per cent)	0	0	0	0
R.S. Sumber Waras	7,939	7,125	25(0.3— per cent)	32(0.4 per-cent)	1	0	4	0
R.S. Ciptomangunkusumo	27,423	22,964	141(0.5— per cent)	121(0.5 per-cent).	8	7	5.7	5.8
	57,205	65,491	185(0.3-per cent)	252(0.4 per-cent).	10	8	5.4	3.2

Nd. = No. data
\+ = July — December
++ = April — December
* = Not included in percentage-determination.

R.S. = Rumah sakit = Hospital
A.L. = Angkatan Laut = Navy
A.D. = Angkatan Darat = Army

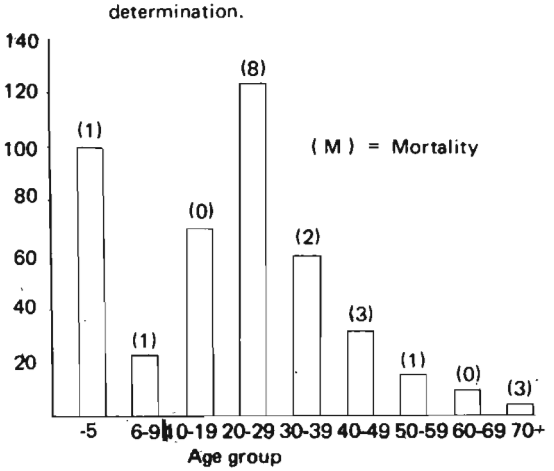

Fig. I. Age distribution of poisoning admitted in the hospitals and their respective mortality.

Referral to hospital for treatment was done for 54 per cent by general practitioners and 27 per cent by relatives.

There is a wide range of time interval between ingestion and admission. Only 116 (27 per cent) cases were admitted in the ward within 5 hours, another 116 cases found their way in hospital only after 5–48 hours, and 46 cases (15 per cent) after more than two days.

More than 50 per cent stay in hospital within 3 days and the mean hospitalization-time was 5.1 days. The following graph reflects the distribution of time spent in hospital (Fig. II).

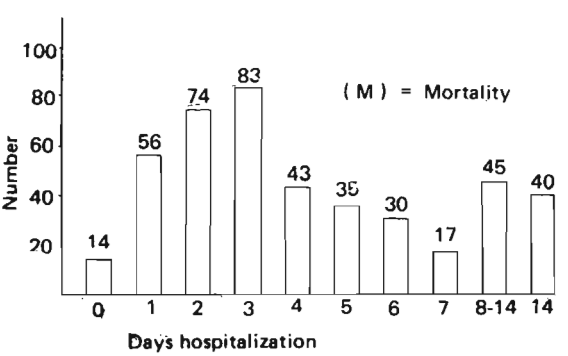

Fig. II. Distribution of hospitalization.

Among the chemicals causing serious lowering of consciousness were: hypnotics like barbiturates, chlorpromazine and methaqualone, kerosene, cyanide (cassave) and organophosphate insecticides.

The level of consciousness was divided into four grades (Matthew, H and Lawson, A.A.H., 1972), and a positive correlation was seen in the sample between grades and mortality percentage (Fig. III).

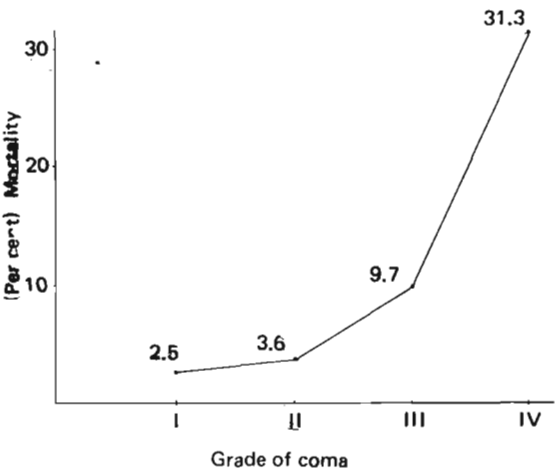

Fig. III. Correllation between grades of coma and percentage mortality.

Nine cases were found exhibiting lowering of body temperature (less than 36°C) and 81 cases showed pyrexia (more than 37.5°C).

Gastric lavage was not routinely done and only 69 cases were treated in this manner.

Onehundred and four patients exhibited spontaneous vomiting but none had received emetic agents.

Maintenance of intravenous fluid was felt "necessary" in 208 cases. for the purpose of water, electrolyte and caloric supplement.

Forced diuresis was done in 69 cases, of which 18 were of phenobarbital poisoning, 5 of bromides, 5 cases with combined poisons, and 39 cases were for other poisons. Serious complications mostly affected the respiratory, renal and neurological systems, while gastrointestinal signs were quite frequent but of non-serious nature.

Motivation for admission was divided in the following categories (table 3):

Table 3. Motivations for admission.

Not known	16 cases
For kicks	8
Attempted suicide	97
Accidental poisoning	146
Overdosage	40
Selfpoisoning (to draw attention)	29
Other	101
	437 cases

In the second category individuals were included who took drugs for the sake of fun and experimentation and incidentally became poisoned; youngsters were usually involved and the drugs taken were the type of maryuana, opiates or other soft drugs.

Attempted suicide was the category that really wanted to die by taking a serious overdose; of these 94 (97 per cent) ended up a life.

Accidental poisoning and overdosage are selfexplaining.

The category of selfpoisoning included individuals who intentionally took an overdose, usually small, with the anticipation that it would not kill them anyway. The purpose of this act was to draw attention and to create a sense of pity among his or her environment.

In the last category of "Other" food poisoning were included, mostly those caused by jengkol-bean and cassave, and homicides.

Diagnosis and the role of laboratory

The diagnosis in all cases but a few were entirely based on clinical findings combined with history. There was still doubt on 70 cases whether poison was actually taken.

No laboratory existed prior to 1973 which could or was engaged routinely in identifiyng poisons in biological specimens. The Departments of Biochemistry and Criminology of the University of Indonesia were involved in some identification-work but these were not widely known and little benefited. The need for such work was appreciated and late in 1972 the Department of Pharmacology of the same University developed a Toxicology section, where it is possible to identify poisons in biological specimens (blood, urine and vomit) qualitatively and semiquantitatively. During 1973, a total of 115 specimens have been

examined in this laboratory, yielding 59 per cent positive findings (table 4) in the remaining 41 per cent the test carried out were negative.

This means that no poison could be found., or there was too little indication to pinpoint the search for the poison.
Too often a request made by the referrer for laboratory analytical examination is only accompanied by the single phrase: "Poison?".
It should be realized that it is a painstaking job to search for all possible poisons. Clinical manifestations and probable causative agents should be included in the request. Table 4 shows the variety of poisons analyzed:

Table 4. Results of 115 analytical determinations.

Chemical	Total analysed	Chemical identified	Chemical not identified
Barbiturates	37	30	7
Tranquilizers	22	10	12
Narcotics	21	10	11
Pesticides	22	11	11
Other	13	7	6
Total	115	68	47

These figures are not connected with the main study but are derived from another group of patients.

Choice of poison

There is a wide range of drugs, chemicals and food attributable as the causative factor. Apart from jengkol food-poisoning, kerosene is the most frequent especially amongst children, followed by barbiturates and salicylates. Pesticides rank fifth place, with a total incidence of 26 cases (5.9 per cent).

Only 4 cases were habituated with barbiturates, Twenty two patients ingested more than one poison. A list of poisons which were encountered in the study and their incidences is as follow:

Table 5. List of causative agents.

Drug or Chemical	Incidence 1971	Incidence 1972	Deaths
Alcohol	2	5	1
Analgesics (other than salicylate or paracetamol)	–	3	–
Anticonvulsant	–	–	–
Antihistamine	1	2	1
Amphetamine	–	–	–
Atropine	1	–	–
Barbiturate (long)	6	28	–
Barbiturate (Other)	2	5	–
Belladonna Extract	1	–	–
Bellapheen	–	1	–
Bromides	1	2	–
Carbon Monoxide	2	–	–
Cedar oil	1	–	–
Chlordiazepoxide	4	6	1
Copper	–	1	–
Corrosives (acids, base, phenol)	12	8	1
Cyanides (Cassave)	8	8	1
Daonil	–	1	1
Delamidon	1	–	1
Diabinese	–	1	–
Diazepam	1	6	–
Digitalis	2	4	3
Eucalyptus oil	1	1	–
Ferrous sulfate	–	1	–
Gasoline	1	–	–
Glutethimide	2	–	–
Jengkol	33	41	–
Kerosene	36	23	1
L.S.D.	–	–	–
MAO. I	–	–	–
Mariyuana	3	–	–
Meprobamate	–	–	–
Mercurochrom	2	–	–
Mercury	1	–	–
Methaqualone	2	9	–
Nitrazepam	–	1	–
Opiates	2	2	1
Ointment (?)	–	1	–
Paint fluid	–	1	–
Paracetamol	–	1	–
Pesticides, O.C.	2	6	–
Pesticides, O.P.	8	8	3
Pesticides, Carbamate (Baygon)	–	1	–
Pesticides (not specified)	1	–	–
Phenothiazine	10	13	1
Piperazine	–	1	–
Potassium permanganate	1	–	–
Prednison	1	1	–
Quinine	–	2	1
Salicylate	16	21	–
Sirofex	–	1	–
Soap	1	–	–
Streptomycin	1	1	–
Sulfa	2	–	–
Tricyclic antidepressant	–	2	1
Unidentified contaminated food	5	9	–
Yetin	–	1	–

DISCUSSION

The true incidence of poisoning in Jakarta is of course larger than surveyed, but il will remain obscure as long as poisonings are not notifiable. Fourhundred and thirty-seven cases of poisoning admitted into hospitals is however a low incidence for a city with 4.5 million inhabitants, during two years. There are several reasons for this: industrial and household chemicals are relatively few; self poisonings or attempted suicides seem not very popular as an act in problem-solving; drug-taking habits are different from western countries. There is reasons to believe however that poisonings will occur more frequently in the future as living-patterns change.

The case-fatality rate is about twice as in other hospitals abroad, which could be regarded as satisfactory, considering that no special attention is paid to this branch of medicine in Jakarta. The prognosis for poisoning in people over 70 years of age is poor; not only do they exhibit a decreased biotransformation-activity, also complications will be more serious.

The role of the general practitioner is quite large in overcoming emergency cases, since 54 per cent were referred by them. A basic knowledge of emergency treatment and useful antidotes should be mastered by general practitioners.

There was very little opportunity to do stomach washings, since only 27 per cent arrive in hospital within 5 hours. This is the critical time where the poison is almost completely absorbed or has passed the stomach, except with salicylates or other drugs which delay gastric emptying such as chlorpromazine or a heavy meal.

Intravenous fluid and forced diuresis was unnecessarily instituted in many cases. As long as a patient is conscious and able to swallow, oral fluids are preferred. Parenteral solutions for maintaining water balance are only indicated if coma existed for more than 12 hours. Also forced diuresis can only be of value when the drug or chemical is excreted in its active form through the kidney. Known to be effective by forced diuresis are: phenobarbital, barbital, amphetamine, alcohol, bromide, meprobamate, acetosal, methylsalicylat, quinine and sulfonamides. The amount of fluid needed for forced diuresis is approximately 1 liter in the first hour and 500 ml hourly thereafter.

Furosemide may be added and the regimen may have to be adjusted according to the patient's response.

There are a few contraindications for the institution of forced diuresis: when heart failure is pending; when renal function is impaired; and when the poison tend to induce lung edema (methaqualone).

When shock exists, this should first be overcome because overhydration may complicate the picture after circulation becomes adequate.

The drugs or chemicals involved in poisoning are similar to other reports, except that jengkol bean poisoning is typical to Indonesia and kerosene (Jo Kian Tjay, et al., 1971), which is used in almost every household. Cyanide-containing cassave is sometimes mistaken for edible species and often cause serious intoxication.

Pesticides make up about 6 per cent of all cases, and this is in accordance with data obtained from other countries (table 1).

Indonesia has been using relatively little amounts of pesticides (Darmansjah, I., 1973) in the past, but with the intensification of agriculture and as a consequence of increased application of pesticides, more pesticides-cases could be anticipated. Adequate measures are now being taken in Indonesia through an agromedical-educational program to minimize occupational hazards from pesticides. A similar approach in industry would be justified to go in line with the advancements of todays increased use of chemicals

SUMMARY

A survey of 437 poisoning cases admitted in 11 Jakarta hospitals was done covering the year 1971 and 1972. All data from the patients original record were tranferred into coding sheets and the characteristics of poisoning discussed. Thirty-four out of 10.000 admittances in Jakarta hospitals were caused by poisoning, while the case fatality rate for both years was 4.2 per cent. More attention should be paid to the management of poisoned patients who are at high risk, such as the very old and the ones who are in deep coma.

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